IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Timothy E. Dickson
Serial No. 09/494,897
Filed: January 31, 2000
For: **FRAUD DETECTION THROUGH FLOW RATE ANALYSIS**

Examiner: Von Buhr, Maria N.
Art Unit: 2125

Commissioner for Patents
Washington, D.C. 20231

Sir:

DECLARATION UNDER RULE 37 CFR § 1.131

I hereby declare that:

1. I am currently employed by Gilbarco Inc. and hold the title of Vice President of Engineering.

2. I am the inventor of the invention disclosed and claimed in U.S. Patent Application Serial Number 09/494,897, entitled **FRAUD DETECTION THROUGH FLOW RATE ANALYSIS**, which was filed January 31, 2000.

3. At least as early as April 21, 1999, I was in possession of the present invention as is evidenced by the Patent Memoranda (PM) 9914 (Exhibit A). Specifically, the second and fourth bullet points of the Patent Memo illustrate the concept of the present invention to a degree sufficient for one of ordinary skill in the art to practice the invention.

4. On March 7, 2003, I accessed the statistics tab within MICROSOFT WINDOWS® relating to the PM 9914 to discover when I created the document.

5. I captured a screen shot of the statistics tab, which is attached as Exhibit B.

6. The evidence in the statistics tab is consistent with my previous declaration that states that I conceived of the idea for the above-identified application in late February 1999,

memorialized it in PM 9914 beginning on March 18, 1999, and submitted PM 9914 to Steve Terranova in April 1999.

7. I hereby acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001), and may jeopardize the validity of the application or any patent issuing thereon. All statements made herein are true and made on information and belief are believed to be true.

Timothy E. Dickson 03/08/03

Timothy E. Dickson Date

Exhibit A

Exhibit A

9914

April 21, 1999

Patent Memo – Fraud detection through inference

Problem – Fraud against liquid measuring devices that consists of a replacement of some portion of the device with a modified part of parts is becoming more prevalent and the attackers more sophisticated. This increases the difficulty of preventing/detecting fraud since the mechanisms responsible for that detection/prevention are often the mechanisms which are modified or replaced.

This increase in fraud results in larger and larger consumer losses, increasing cost of devices as anti-fraud mechanisms (usually mechanical) are added and a decrease in consumer confidence.

Solution – Provide a software based method of inferential fraud detection that does not depend on any fraud detection in the liquid measuring device itself. This technique would use a number of methods to infer potential fraud and alert appropriate individuals or authorities. Successfully countering one of the methods would not disable the fraud detection capability.

The approach would be to use normal system activity to spot abnormal activity that might indicate fraud. It depends on the fact that fraud will continue over a long time in order to get pay back for the effort and cost to introduce the fraud in the first place.

Since most gasoline retailing operations employ a central controller, that controller would be the focal point for data gathering, data analysis, and device/module authentication used in this multi-layer fraud detection scheme. Alternatively, data analysis could be done off site. This scheme could be used in addition to any fraud detection/prevention mechanisms in the liquid measuring device itself.

The fraud detection system could include, but not be limited to the following:

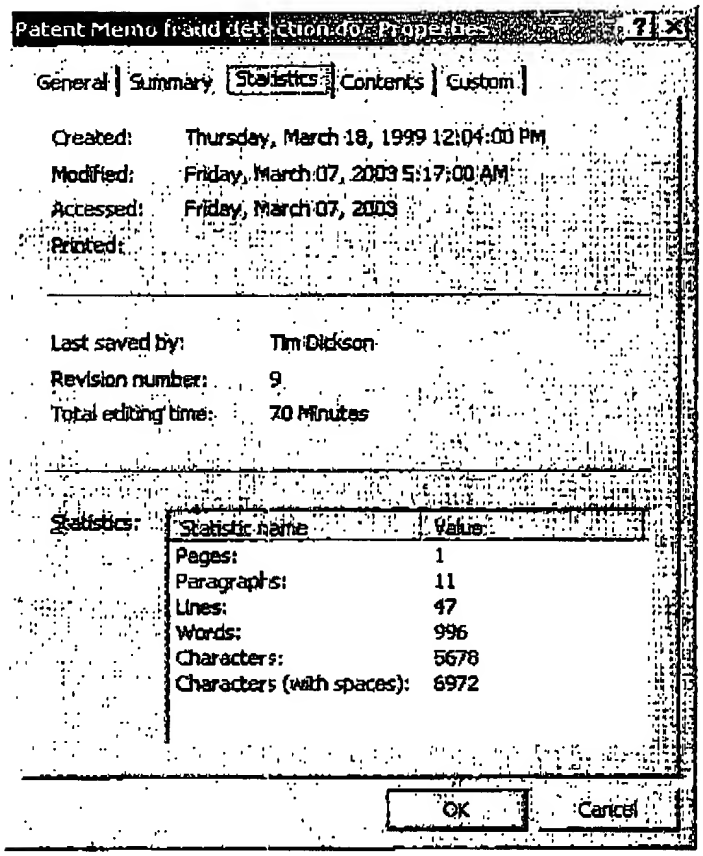
- Authentication of the dispensers software to detect modification. This can be done by a number of techniques already in the industry, such as use of cryptographic signatures.

Exhibit A

- Monitoring and analysis of the vapor returned at a station or group of stations. Based on the level of efficiency of the vapor systems the amount of vapor returned on non-fraudulent fuel sales should significantly higher than fraudulent transactions.
- Monitoring of flow rates. The rate per gallon on average over all non-fraudulent transactions should significantly higher than the flow rate exhibited during fraudulent sales. This would be determined by a comparison of the avg. flow rate versus the volume delivered. For example, if a non-fraudulent fuel sale of 10 gal. is delivered at an avg. of 8 gal. per minute, a fraudulent fuel sale of 8 gal. (but presented the consumer at 10 gal.) should exhibit a marked lower avg. flow rate, up to 20%).
- A similar or additional approach could be to measure the time of the fuel delivery at each fueling position and watch for a change or consistently faster time per gal. indicating a fraudulent device.
- Monitor for increases or decreases in flow rate at a dispenser which do not match the overall pattern for the rest of the dispensers at the site.
- Contrast Tank Monitor (or even probe data) measurements against volume reported dispensed by the liquid measuring device whenever that device is the sole device in operation.
- Preload a set of norms for a station of like configuration that is know to contain now fraudulent data. This data can then be used to compare against the equipment on that site.
- In order to guard against a site in which all units are modified in the same manner at the same time. Data collected could be sent to a central location that is used to compare that site's data against either a control data set or a large number of sites.
  - Lack of data from any site would also indicate a potential fraud situation.

Exhibit B

Exhibit B


Patent Memo fraud detection.do Properties
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Custom
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Characters (with spaces): 6972
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